

ABSTRACT

[0042] A clutch hydraulic actuator system having a vibration damper provided in the system between a master cylinder and a slave cylinder of the system. The damper includes a housing, an elastomeric diaphragm, and a spring steel diaphragm. The upper face of the elastomeric diaphragm is in fluid communication with hydraulic fluid in the system so that the elastomeric diaphragm may deflect in response to low frequency vibrations transmitted through hydraulic fluid in the system to effect damping of the low frequency vibrations. The spring steel diaphragm is positioned in the system generally parallel to and proximate the lower face of the elastomeric diaphragm so as to form a back up for the elastomeric diaphragm so that the elastomeric diaphragm may deform against the spring steel diaphragm in response to intermediate frequency vibrations transmitted through the hydraulic fluid to cause deflection of the spring steel diaphragm to effect damping of the intermediate frequency vibrations. A thin annular sidewall of the damper housing coacts with the upper face of the elastomeric diaphragm to form a large volume fluid chamber above the elastomeric diaphragm which provides further, high frequency system damping by virtue of vibratory volumetric expansion of the thin housing sidewall.